Grove - Electricity Sensor

From Wiki

(Redirected from Twig - Electricity Sensor)
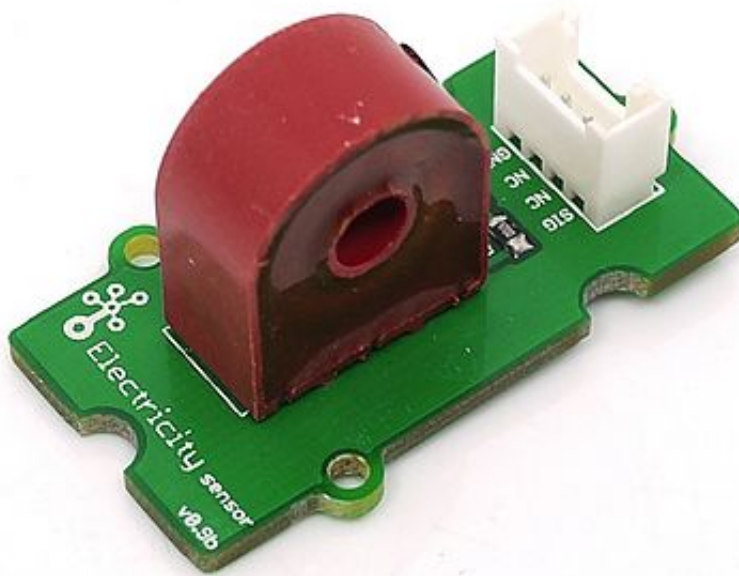
Contents

Introduction

The Electricity sensor module is a member of Grove. It is based on the TA12-200 current transformer which can change large alternating current into a small amplitude. You can use it to test large alternating current upto 5A.

Model:SEN23931P (http://www.seeedstudio.com/depot/grove-electricity-sensor-p-777.html?cPath=144_154)

Features

- Grove compatible interface
- Maximum 5A input
- High accuracy
- Small size

Application Ideas

- Alternating current measurment
- Device condition monitoring

Cautions

The warnings and wrong operations possible cause dangerous.

Schematic

It is the schematic, the circuit about Eagle resource like .pdf should linked here in order to avoid memory exhausted.

Specification

May include key specification and other specifications.

Key Specification

Items	Min
PCB Size	2.0cm*4.0cm
Interface	2.0mm pitch pin header
IO Structure	SIG,NC,NC,GND
ROHS	YES

Electronic Characterstics

Items	Min	Norm	Max	Unit
Transformation ratio	-	2000:1	-	-
Input Current	0	-	5	A
Output Current	0	-	2.5	mA
Sampling Resistance	-	800	-	Ω
Sampling Voltage	0	-	2	V
Working Frenquency	20	-	20K	HZ
Nonlinear scale	-	-	0.2%	-
Phase Shift	-	-	5'	-
Operating Temperature	-55	-	85	°C
Dielectric strength	-	6	-	KVAC/1min

Pin definition and Rating

Mechanic Dimensions

Usage

Hardware Installation

Connect the module to the Grove Basic board using the analog interface. Put the alternating current wire through the hole of the current transformer. The SIG pin will output a alternating voltage based on the alternating current being measured. You can measure the value using ADC.

Programming

The following sketch demonstrates a simple application of measuring the amplitude of the alternating voltage.Demo code like :

```
const int sensorPin = A0;      // pin that the sensor is attached to
int sensorValue;
int time=1;
float current;
float effective_value;
void setup() {
  Serial.begin(115200);
}
void loop() {

 int sensorMax = 0;
 while (millis() <time*1000) {
   sensorValue = analogRead(sensorPin);

   // record the maximum sensor value
   if (sensorValue > sensorMax) {
     sensorMax = sensorValue;
   }
 }
 time++;
 current=(float)sensorMax/1024*5/800*2000000;
 effective_value=current/1.414;
 Serial.println("The amplitude of the current is(in mA)");
 Serial.println(current, 1);
 Serial.println("The effective value of the current is(in mA)");
 Serial.println(effective_value, 1);
}
```

The minimum effective current that can be sensed by the code can be calculated using the equation below.

minimum_current=1/1024*5/800*2000000/1.414=8.6(mA)

Bill of Materials (BOM) /parts list

All the components used to produce the product.

FAQ

Please list your question here:

Support

If you have questions or other better design ideas, you can go to our forum (http://www.seeedstudio.com/forum) or wish (http://wish.seeedstudio.com) to discuss.

Version Tracker

Revision	Descriptions	Release
v0.9b	Initial public release	Jan 14, 2011

Bug Tracker

Bug Tracker is the place you can publish any bugs you think you might have found during use. Please write down what you have to say, your answers will help us improve our products.

Additional Idea

The Additional Idea is the place to write your project ideas about this product, or other usages you've found. Or you can write them on Projects page.

Resources

- File:Electricity sensor sch.pdf
- File:Electricity sensor v1.0 eagle files.zip

How to buy

Click here to buy Grove - Electricity Sensor: http://www.seeedstudio.com/depot/grove-electricity-sensor-p-777.html?cPath=144_154.

See Also

- GROVE - Starter Bundle
- 2-axis compass Module
- Grove - I2C 3-axis Accelerometer
- Grove - 3-axis Compass
- Grove - Water Sensor
- Grove - Light Sensor
- Grove - Touch Sensor
- Grove- Temperature and Humidity Sensor
- Grove - Magnetic Switch
- Grove - Alcohol Sensor
- Grove - Serial LCD
- Grove - RTC
- Grove - 3-axis Gyro
- Grove - Sound Sensor
- Grove - Base Shield

Licensing

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External Links

Links to external webpages which provide more application ideas, documents/datasheet or software libraries

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